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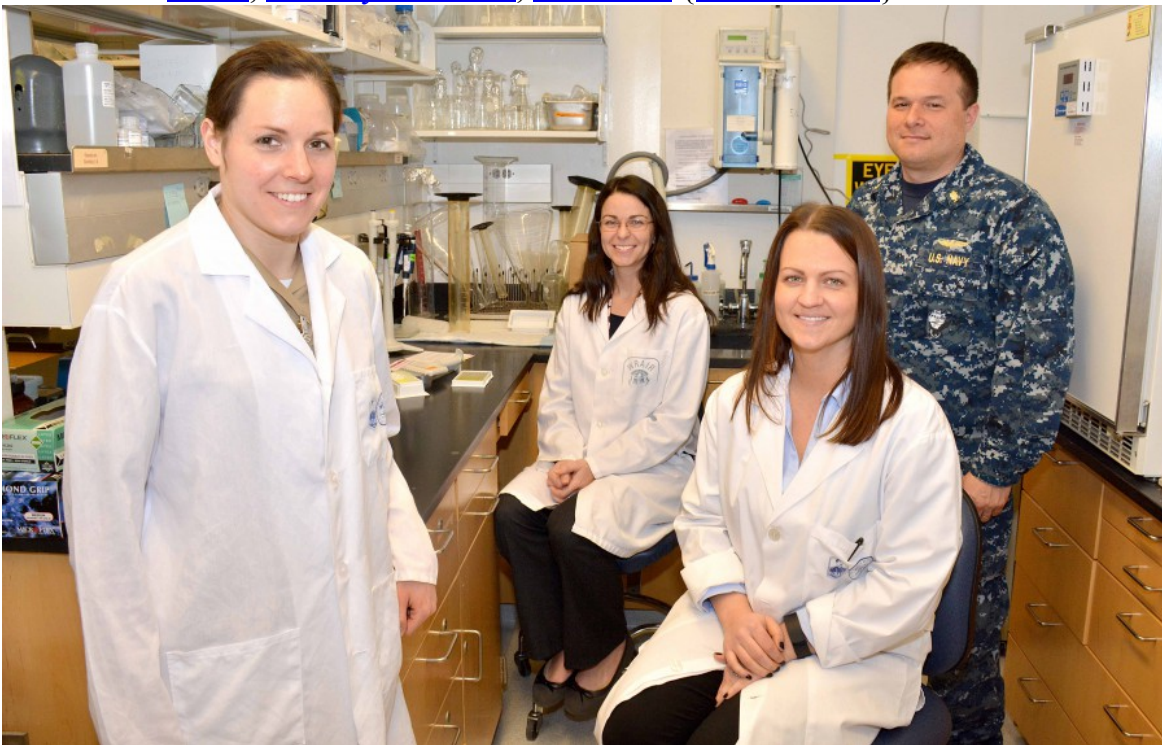
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## [Toward a Better Understanding of Brain Injury](#)

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(from left) researchers in Naval Medical Research Center's Neurotrauma department, Lt. Melissa Mehalick, Dr. Amanda Glueck, Dr. Anna Tschiffely and Lt. Cmdr. Peter Walker. (Photo courtesy of the Naval Medical Research Center Public Affairs.)

**By Lt. Cmdr. Peter B. Walker, Naval Medical Research Center**

For the Neurotrauma Department (NTD) at the Naval Medical Research Center (NMRC) in Silver Spring Maryland, March is Brain Injury Awareness Month. To do our part NTD (comprised of more than 20 military, government civilian, and contractors) has recently been an active participant at several local and national events that help to highlight our role as one of the leading laboratories in the country focused on neurotrauma research.

Recently, Lt. Jacob Norris (Research Psychologist) was invited to Northeastern University by Nu Rho Psi, the National Honor Society for Neuroscience, to give a guest lecture on NTDs ongoing research program in Traumatic Brain Injury (TBI) and Post-traumatic Stress Disorder (PTSD). Later this month, Lt. Norris will be giving a similar lecture to his alma-mater at Texas Christian University. These invited talks help illustrate the notoriety that NTD has received within this research domain to push the boundaries of our knowledge on this important topic.

To assist in local STEM outreach, Lt. Melissa Mehalick (Research Psychologist) and I (Aerospace Experimental Psychologist) will be participating in a local workshop demonstration for elementary school children from the local area at the National Military Medical Museum in Silver Spring, Maryland.

We will be demonstrating to these students the physics of blast and provide the students an opportunity to interact with several different types of protective gear including helmets, Kevlar vests, and blast dosimeters.

In order to understand the pathophysiology behind different forms of neurotrauma including TBI and PTSD, our department has developed a laboratory model that investigates both the acute and chronic effects of blast exposure. Here, our researchers have investigated the interactions between blast exposure and fear circuitry in the brain. For example, Dr. Anna Tschiffely and Dr. Amanda Glueck have begun to assess fear circuitry damage and molecular correlates of TBI and PTSD following blast. Specifically, our scientists have measured Stathmin-1 protein and corticosterone levels. Early evidence is suggestive that Stathmin-1 protein levels may be elevated in the amygdala after acute exposure to blast.

However, our research is not just limited to understanding the acute effects of TBI. Our group has recently launched a multi-year effort to understand the long-term health outcomes of blast-induced concussion. Specifically, our group has developed a surveillance database of over 2500 military service members that developed a blast-induced concussion in theater. For this effort, NTD has partnered with the Armed Forces Health Surveillance Center to examine neuroendocrine dysfunction and the likelihood of poor cardiovascular health for post-deployment warfighters. We've argued that such an understanding will enhance screening and surveillance for persistent post-concussive syndrome and mental health disorders like Post-traumatic Stress. Additionally, understanding the strength of the relationship between neuroendocrine and cardiovascular problems with persistent post-concussive syndrome or post-traumatic stress disorder will improve Navy Medicine's ability to plan for patient care in the coming years.

Research initiated because of military engagements throughout the Middle East, remain important as we shift toward understanding long-term health implications for wounded warriors. Therefore, our department will continue to be engaged and focus on the development of novel and innovative empirical methodologies to address brain injury.